2 Workshop Process Overview

This section describes the progression of the workshop process design and development. It also describes the conduct of the workshops and adjustments to the process during the course of the workshops based on participant feedback.

2.1 Workshop Development

The NOAA corporate intention to seek the guidance of a broad community of ocean exploration stakeholders in order to refine program priorities within the context of the *Frontier Report* was originally proposed by the Acting Administrator of NOAA in testimony before the U.S. Congress in July 2001.[3] In January 2002, the Director of OE solicited the assistance of regional National Undersea Research Centers (NURCs) and the National Marine Sanctuaries System (NMSS)[4] in identifying an appropriate, representative cross-section of ocean exploration stakeholders within each region. The complete list of invitees, including the identity of those who attended the workshops, is included in Volume II. Local points of contact for providing administrative and logistical support were also identified. Stakeholders subsequently received invitations from OE to participate in the workshop that would be hosted within their region. These invitations provided background information on OE, directed attention to the guidance within the *Frontier Report*, and requested participant input within the planned, facilitated workshop sessions to address the following questions:

- What do we not know about the oceans and specific ocean regions?
- What will it take to gain this knowledge (in terms of technologies, deployable assets, and costs)?
- In what order or priority should these be addressed?
- What are the regional assets and who are potential partners?

During this preparatory phase, OE enlisted the assistance of facilitators with subject matter expertise from Mitretek to help ensure unbiased objectivity in developing the process and during the conduct of the workshops. The regional areas of emphasis, locations, dates, and local points of contact for each of the workshops are listed in Table 2-1. OE also created an email address to collect input from invitees who desired to participate in the process but were unable to attend a particular workshop.

Table 2-1. Regional OE Workshops

Region	Dates	Location	Local Point of Contact
Caribbean	February 25-26	Rosenstiel School of Marine & Atmospheric Science (RSMAS), Univ. of Miami, Miami, Florida	Dinah Berry
Gulf of Mexico	February 28 – March 1	Mississippi Mineral Resources Institute, Univ. of Mississippi, Oxford, Mississippi	Robin Buchannon Nancy Roberts
Hawaii	March 12-13	Ala Moana Hotel, Honolulu, Hawaii	Karynne Morgan
Alaska	March 18-19	Captain Cook Hotel, Anchorage, Alaska	Jennifer Reynolds Dana Kapla
West Coast	March 21-22	Monterey Bay Aquarium Research Institute (MBARI), Moss Landing, California	Kelly Newton Cyndi Stubbs
Atlantic North	March 27-28	University of Connecticut (Avery Point), Groton, Connecticut	Chris Marceau
Great Lakes	April 4-5	Milwaukee County War Memorial Center, Milwaukee, Wisconsin	Joni Jackson Smith Anne Wright
Atlantic South	April 10-11	National Center for Coastal Environmental Health & Biomolecular Research (CCEHBR), Charleston, South Carolina	Debbie Lawson Karen Lawrence

Gary Mineart and Mike Ciarametaro of Mitretek designed the two-day workshop structure with guidance from Tom Goodspeed and Tim Culliton of the National Ocean Service (NOS) Special Projects Division and Joanne Flanders of OE. The process consisted of two phases of information gathering from workshop participants. Two breakout groups (eight to fifteen people each) were designed for the collection of information in both phases. Objective areas based on the goals and objectives contained in the *Frontier Report* were developed and used to focus the direction of the breakout group participants. These objective areas are described in Table 2-2. Although these objective areas tended to focus on areas within U.S. jurisdiction such as the Economic Exclusion Zone (EEZ), the process was designed to accommodate perceived needs beyond boundaries associated with current paradigms.

Table 2-2. OE Workshop Objective Areas

Observation and Mapping	
Summary:	Observation and mapping of the physical, geological, biological, chemical, and archeological aspects of the ocean, such that the U.S. knowledge base is capable of supporting the large demand for this information from policy makers, regulators, commercial ventures, researchers, and educators
Elements:	• Find and systematically explore dozens of new archeological sites • Discover both living and nonliving resources and their identity, location, and abundance principally within the EEZ and continental margins • Discover thousands of undescribed species • Find new ecosystems and describe communities of organisms displaying novel relationships with their physical, chemical, and geological environments • Map the ridges, canyons, faults, and other key features of the EEZ and continental margins that have scientific or cultural importance
Ocean Dynamics and Interactions	
Summary:	Exploration of ocean dynamics and interactions at new scales, such that our understanding of the complex interactions in the living ocean supports our need for stewardship of this vital component of the planet's life support system
Elements:	• Explore the variability of the ocean's interior and the earth beneath it • Discover dozens of new oceanographic features changing over spatial scales from 10 to 10,000 kilometers, and temporal scales from picoseconds to millennia; including the ocean's interaction with the atmosphere and as a key component of the global hydrological cycle • Discover unexpected changes in temperature, salinity, photosynthesis, and ocean circulation over a wide range of time scales through sensing of the ocean's surface • Explore the connection of living and nonliving systems in the ocean and coastal zones by unraveling dozens of biological, geological, chemical, and physical processes affecting the interactions among species and the cycling of organic materials
Development of New Technologies Reaching out to Stakeholders in New Ways	
Summary:	Developing new sensors and systems for ocean exploration, so as to regain U.S. leadership in marine technology Reaching out in new ways to stakeholders, to improve the literacy of learners of all ages with respect to ocean issues
Elements:	• Invent, build, and adapt the wide array of tools, including remote sensors and in-situ capabilities, necessary for measuring, mapping, and exploring the physical, geological, chemical, and biological parameters of the ocean • Create new concepts and methods for viewing the whole ocean through time, from anywhere • Establish the ability to broadcast ocean expeditions to reach school districts in the nation • Develop new technologies that bring scientists and explorers into formal and informal educational settings, and students, educators, and the general public into the field • Allow petroleum, fisheries, and biomedical industries to make hundreds of discoveries of new materials, pharmaceuticals, and enzymes using the knowledge gained from ocean exploration

The first phase of the workshop process was designed to focus on the identification of ocean exploration needs within candidate regions of interest based on the perspectives of the workshop participants. Activities during this phase included obtaining a description of each need, reasons that justified emphasis on each need, technologies that could be

applied, and specific geographic areas of emphasis matched against each need. This first phase concluded with an exercise by participants designed to link related needs, identify within the developed needs those that participants commonly felt warranted some level of emphasis, and select the order that the needs would be addressed during the second phase of the workshop.

This second phase sought potential approaches for satisfying the ocean exploration needs identified during the first phase. For each potential approach, workshop participants identified enabling technologies that existed or needed to be developed, a candidate list of regional stakeholders that were considered potential partners for each line item, key benefits that were expected to be realized, and a qualitative measure of the implementation feasibility.[5]

The workshop design included a plenary review of breakout group results following both phases and opportunities for participant feedback to the facilitators. The workshop facilitation team developed and produced large hardcopy plots of the worksheets that were used to gather information in the breakout sessions, with each leading worksheet including an example of the data to be collected. Additional large plots were produced in order to display the workshop objectives, breakout group objective areas, and guiding principles for participant conduct in the plenary meeting room and in each breakout room. A total of 320 large plots were produced to support the eight workshops. Additionally, NOAA nautical charts covering each regional area of interest were provided for use by the workshop participants.

2.2 Implementation

The facilitation team initially executed the workshop process in Miami, Florida for the Caribbean region (Figures 2-1 and 2-2). Information captured on large hardcopy plots during the breakout group sessions was also recorded in real-time on electronic worksheets by facilitation team recorders using laptop computers; these worksheets were used by participants to brief breakout group session results. These worksheets were also used by the facilitation team to retain a record of the information produced by the

workshop, to produce summaries of the first day's results for use during the second phase of the workshop, and to provide participants with a raw copy of results for their retention.

Figure 2-1. A breakout group selects common interests as part of an exercise during the Caribbean region workshop *(image courtesy of Amy Sheridan)*

Three modifications to the process were implemented as a result of constructive feedback provided by participants at the initial workshop. Initially, time had been devoted to the second phase at the end of the first day of the workshop. Since the conclusion of the first phase plenary session represented a natural break in the process, this point became the new conclusion of the first workshop day and the needs identification phase was expanded slightly to fill the time. The participants elected to link exploration needs into related groups for the second phase, which eliminated need for the originally planned time on the first day to commence the second phase of the workshop. The second modification was a transition during the second phase from a discussion of cost ranges for each approach to the qualitative measure of feasibility discussed earlier. This modification was driven by the difficulty in approximating cost ranges for exploration approaches that incorporated a significant amount of new technology and a general

reluctance on the part of many workshop participants to offer cost estimates. The third process modification was made due to the emphasis placed on identification of applicable target locations for exploration activities during the first phase of the process, negating the need to reemphasize locations for specific approaches during the second phase. In its place, the facilitators elicited key benefits resulting from the potential satisfaction of applicable ocean exploration needs.

Figure 2-2. Dr. Jerald Alt of RSMAS presents breakout group results in plenary session at the Caribbean region workshop *(image courtesy of Amy Sheridan)*

With the exception of these modifications, the workshop process remained relatively stable throughout the eight regions. The agenda was adjusted slightly as necessary to incorporate the logistical needs of local host site personnel. One observation shared by facilitators after the first few workshops was the recurrence of similar approach techniques and suites of equipment identified by participants to meet a variety of exploration needs. To streamline the second phase of the process, the facilitators began to offer these similar techniques, equipment suites, and collaborators as "standard packages" or "standard partners" to which the participants could add or subtract elements as deemed

appropriate. This practice allowed each breakout group to address a greater number of exploration needs during this second phase. This process is discussed in greater detail in Section 3.

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